



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/627,385

07/25/2003

Santosh S. Rao

VRT0089US

3916

60429 7590 02/06/2009
CAMPBELL STEPHENSON LLP
11401 CENTURY OAKS TERRACE
BLDG. H, SUITE 250
AUSTIN, TX 78758

EXAMINER

WASEL, MOHAMED A

ART UNIT

PAPER NUMBER

2454

MAIL DATE

DELIVERY MODE

02/06/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/627,385	Applicant(s) RAO ET AL.	
	Examiner MOHAMED WASEL	Art Unit 2454	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12, 13, 15, 17-23, 25 and 28-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12, 13, 15, 17-23, 25 and 28-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is responsive to Request for Continued Examination (RCE) filed on November 18, 2008.

Claims 1-10, 12, 13, 15, 17-23, 25 and 28-31 are presented for examination.

New Ground(s) of Rejections

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claim 15 is objected to because of the following informalities: "remove **the the** first of the plurality of virtual..." in line 13 of the claim needs to be changed to "remove **the** first of the plurality of virtual...". Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 12 rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter.

A product is a tangible physical article or object, some form of matter, **which a signal is not**. That the other two product classes, machine and composition of matter, require physical matter is evidence that a manufacture was also intended to require physical matter. **A signal, a form of energy, does not fall within either of the two definitions of manufacture. Thus, a signal does not fall within one of the four statutory classes of § 101.**

On the other hand, from a technological standpoint, a signal encoded with functional descriptive material is similar to a computer-readable memory encoded with functional descriptive material, in that they both create a functional interrelationship with a computer. In other words, a computer is able to execute the encoded functions, regardless of whether the format is a disk or a signal.

Claim 12 is rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter. Claim 12 is directed to a computer readable medium including **communications medium conveying signals encoding the instructions**, which does not fall within one of the four statutory classes of § 101. Applicant is advised to direct the claim language to a computer-readable **storage** medium no such as hard disk, CD-ROM or the like and not both storage and communication medium.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 28, the cited limitation “ a means detecting when a computer system...” in line 4 of the claim renders the claim indefinite because it is unclear what this limitation pertains to. Appropriate correction is required where applicable.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-10, 12, 13, 15, 17-23, 25 and 28-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Wipfel et al ,(Wipfel) U.S. Patent Application Pub. No. 2005/0268154.

1. As per claim 1, Wipfel teaches a method comprising:

providing a coordinator virtual device corresponding to a portion of a physical data storage device

(Paragraph(s) [0022]);

detecting when a computer system cluster, including a plurality of nodes, is partitioned
(Paragraph(s) [0013], [0040]; **cluster detects failure immediately to prevent wide-spread data corruption**);

a first node of the plurality of nodes attempting to gain control of the coordinator virtual device
(Paragraph(s) [0043], [0079]); and

removing the first node of the plurality of nodes from the computer system cluster when the attempting is unsuccessful so that the first node of the plurality of nodes lacks access to the portion of the physical data storage device (Paragraph(s) [0041], [0052], [0075]).

2. As per claim 2, Wipfel teaches the method wherein the providing the coordinator virtual device corresponding to the portion of the physical data storage device further comprises:

selecting the portion of the physical data storage device (Paragraph(s) [0079]).

associating a physical description of the portion of the physical data storage device with a coordinator virtual device identifier (Paragraph(s) [0079]); and

allowing at least one of the plurality of nodes of the computer cluster to access the portion of the physical data storage device via the coordinator virtual device identifier (Paragraph(s) [0042]).

3. As per claim 3, Wipfel teaches the method wherein the providing a coordinator virtual device corresponding to the portion of the physical data storage device is performed by at least one virtual device configuration server (Paragraph(s) [0024]).

4. As per claim 4, Wipfel teaches the method wherein the at least one virtual device configuration server is separate from the plurality of nodes of the computer cluster and wherein at least one of the plurality of nodes of the computer cluster further comprises a virtual device configuration client (Paragraph(s) [0024], [0029], Fig. 1).

5. As per claim 5, Wipfel teaches the method further comprising:

reading cluster membership information from the coordinator virtual device corresponding to the portion of the physical data storage device (Paragraph(s) [0050]).

6. As per claim 6, Wipfel teaches the method wherein the detecting when the computer system cluster, including the plurality of nodes, is partitioned further comprising:

Art Unit: 2454

reading, as performed by one of the plurality of nodes, cluster membership information from the coordinator virtual device corresponding to the portion of the physical data storage device (**Paragraph(s) [0041-0042]**); and

determining whether the cluster membership information indicates that the one of the plurality of nodes is a current member of the computer system cluster (**Paragraph(s) [0065]**).

7. As per claim 7, Wipfel teaches the method further comprising:

writing cluster membership information to the coordinator virtual device corresponding to the portion of the physical data storage device (**Paragraph(s) [0050]**).

8. As per claim 8, Wipfel teaches the method of wherein the coordinator virtual device corresponding to the portion of the physical data storage device further comprises cluster membership information (**Paragraph(s) [0043]**).

9. As per claim 9, Wipfel teaches the method wherein the coordinator virtual device corresponding to the portion of the physical data storage device is a coordinator volume (**Paragraph(s) [0043]**).

10. As per claim 10, Wipfel teaches the method wherein the detecting when a computer system cluster is partitioned further comprises:

monitoring a network coupled to each of the plurality of nodes for a heartbeat signal and determining when the heartbeat signal is not present for a specified period of time (**Paragraph(s) [0040]**).

11. As per claim 12, Wipfel teaches the method encoded in a computer readable medium as instructions executable on a processor, the computer readable medium being one of an electronic storage medium, a magnetic storage medium, an optical storage medium, and a communications medium conveying signals encoding the instructions (**Paragraph(s) [0030]**).

12. As per claim 13, Wipfel teaches the method further comprising:

allowing at least one of the plurality of nodes of the computer cluster to exclusively access the portion of the physical data storage device (**Paragraph(s) [0075]**).

13. As per claim 15, Wipfel teaches a system comprising:

a first data storage device (**Paragraph(s) [0030]**);

a virtual device configuration server coupled to the first storage device and including a first memory and a first processor configured to provide a coordinator virtual device corresponding to a portion of the first data storage device (**Paragraph(s) [0037]**);

a plurality of virtual device configuration clients configured as a computer system cluster, a first of the plurality of virtual device configuration clients including a second memory and a second processor (**Paragraph(s) [0024]**) configured to:

detect when the computer system cluster is partitioned (**Paragraph(s) [0013], [0040]; cluster detects failure immediately to prevent wide-spread data corruption**);

attempt to gain control of the coordinator virtual device corresponding to the portion of the first data storage device (**Paragraph(s) [0043], [0079]**); and

remove the first of the plurality of virtual device configuration clients from the computer system cluster when the attempt to gain control of the coordinator virtual device is unsuccessful so that the first of the plurality of virtual device configuration clients lacks access to the portion of the first data storage device (**Paragraph(s) [0041], [0052], [0075]**).

14. As per claim 17, Wipfel teaches the first data storage device is at least one of a disk drive, a JBOD, a disk array, and an integrated circuit (**Paragraph(s) [0028]**).

15. As per claim 18, Wipfel teaches the system wherein the first data storage device is coupled to the virtual device configuration server via a network (**Paragraph(s) [0024]**).

16. As per claim 19, Wipfel teaches the system wherein the virtual device configuration server is a volume server, wherein the coordinator virtual device is a coordinator volume, and the plurality of virtual device configuration clients is a plurality of volume clients (**Paragraph(s) [0043]**).

17. As per claim 20, Wipfel teaches the system wherein the first of the plurality of virtual device configuration clients is further configured to read cluster membership information from the coordinator virtual device corresponding to the portion of the first data storage device (**Paragraph(s) [0050]**).

18. As per claim 21, Wipfel teaches the system of claim 20 wherein the first of the plurality of virtual device configuration clients is further configured to determine whether the cluster membership information

Art Unit: 2454

indicates that the first of the plurality of virtual device configuration clients is a current member of the computer system cluster (**Paragraph(s) [0041], [0042], [0065]**).

19. As per claim 22, Wipfel teaches the system wherein the first of the plurality of virtual device configuration clients is further configured to write cluster membership information to the coordinator virtual device corresponding to the portion of the first data storage device (**Paragraph(s) [0050]**).

20. As per claim 23, Wipfel teaches the system wherein the coordinator virtual device corresponding to at least a portion of the first data storage device further comprises cluster membership information (**Paragraph(s) [0043]**).

21. As per claim 25, Wipfel teaches the system wherein the first memory and the virtual device configuration server belong to at least one of a host computer system, a cluster node, a storage appliance, a network appliance, and a storage area network (SAN) switch (**Paragraph(s) [0022]**).

22. Claim 28 is rejected under the same rationale as claim 1.

23. Claim 29 is rejected under the same rationale as claim 5.

24. Claim 30 is rejected under the same rationale as claim 7.

25. Claim 31 is rejected under the same rationale as claim 6.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please refer to form PTO-892 (Notice of Reference Cited) for a list of relevant prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohamed Wasel whose telephone number is (571) 272-2669. The examiner can normally be reached on Mon-Fri (8:00 am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2454

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)? If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mohamed Wasel/
Patent Examiner, Art Unit 2454
January 21, 2009

/Nathan J. Flynn/
Supervisory Patent Examiner, Art Unit 2454